

**International General Certificate of Secondary Education**  
**UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**  
**PHYSICS** **0625/5**

PAPER 5 Practical Test

**INSTRUCTIONS**

**MAY/JUNE SESSION 2000**

1 hour 15 minutes

**Great care should be taken that any confidential information given does not reach the candidates either directly or indirectly.**

**Instructions for preparing apparatus**

The teacher responsible for preparing the examination is **not** allowed to consult the question paper before the examination. Teachers should, as a part of the preparation of the examination requirements, perform the tests indicated on pages 3 and 4 in order to satisfy themselves that the supplied materials are satisfactory.

*N.B.* The candidates will be instructed not to write out a detailed description of the apparatus; instead, the Supervisor or teacher responsible is asked to give (and attach to the Report form printed on pp. 7 and 8) a *brief* description of the apparatus supplied, mentioning any points which are likely to be of importance to the Examiner in marking the answers. The Supervisor should also report any assistance given to candidates under the regulations explained on page 2. All reports should be signed by the Supervisor and by the person responsible for preparing the apparatus.

In addition to the usual equipment of a physics laboratory, each candidate will require the apparatus specified on pages 3 and 4. If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Report.

---

**This question paper consists of 7 printed pages and 1 blank page.**

## Instructions for the Practical Physics Supervisor

### A *Assistance to Candidates*

The purpose of the Practical Physics test is to find out whether the candidates can carry out simple practical work themselves. The Examiners are aware that candidates may sometimes be unable to show their practical ability through failure to understand some point in the theory of the experiment. If an Examiner were present in the laboratory, he would be willing to give a hint to enable such a candidate to get on with an experiment. In order to overcome this difficulty, the Supervisor is asked to co-operate with the Examiners to the extent of being ready to give (or allow the Physics teacher to give) a hint to a candidate who is unable to proceed.

The following regulations must be strictly adhered to.

- (i) No hint may be announced to the candidates as a whole.
- (ii) A candidate who is unable to proceed and requires assistance must come up to the Supervisor and state the difficulty. Candidates should be told that the Examiners will be informed of any assistance given in this way.
- (iii) A report must be made of any assistance given to the candidate, with the name and index number of the candidate.

It is suggested that the following announcement be made to the candidates.

'The Examiners do not want you to waste time through inability to get on with an experiment. Any candidate, therefore, who is unable to get on with the experiment after spending 5 minutes at it, may come to me and ask for help. I shall report to the Examiners any help given in this way, and some marks may be lost for the help given. You may ask me for additional apparatus which you think would improve the accuracy of your experiments, and you should say, on your script, how you use any such apparatus supplied.'

### B *Number of sets of apparatus*

As a *minimum*, the number of sets of apparatus provided should be  $N/4$ , where  $N$  is the number of candidates (per session): a few spare sets should, preferably, be available to avoid any candidate being delayed when moving to another question.

Centres may find it more convenient and easier to administer if  $N/3$  sets (plus one or two 'spares') of apparatus are provided.

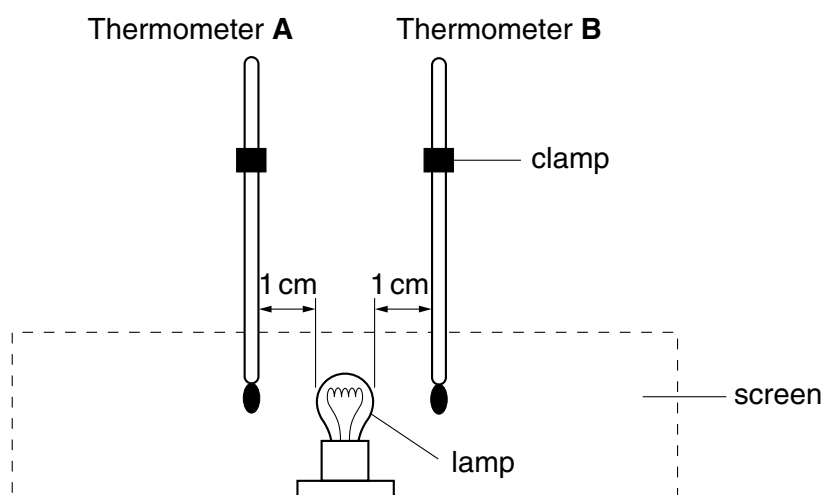
The order in which a given candidate attempts the four questions is immaterial.

**1** *Items to be supplied by the Centre (per set of apparatus unless otherwise specified)*

- (i) A thermometer,  $-10$  to  $110^{\circ}\text{C}$ , labelled **A**
- (ii) A thermometer,  $-10$  to  $110^{\circ}\text{C}$  (see note 1 below), labelled **B**
- (iii) 12 V, 24 W lamp (a car headlamp bulb is suitable)
- (iv) Power supply and leads for the lamp
- (v) 2 clamps, 2 bosses, 2 stands
- (vi) Screen (stiff card or hardboard)
- (vii) Stopclock or stopwatch. Candidates may use their own wristwatches.

**Notes**

- 1 This thermometer is to have a blackened bulb. Powder paint, emulsion paint or poster paint are suitable for this. The two thermometers should otherwise be as similar as possible. Thermometer B should give a significantly greater temperature rise compared to A when the lamp is switched on.
- 2 The apparatus is to be set up for the candidates as shown in Fig. 1.1. The screen must be of suitable size and positioned so that the candidate can take readings from the thermometers without being dazzled by the lamp.



**Fig. 1.1**

- 3 At change over, the Supervisor must check that the position of the apparatus is as shown in Fig. 1.1.

**2** *Items to be supplied by the Centre (per set of apparatus unless otherwise specified)*

- (i) Plasticine mass  $50\text{ g} \pm 5\text{ g}$ , moulded into a rectangular shape. (Candidates will be required to measure the length, height and width of the block.) 1 sample per candidate, plus some spares
- (ii) Metre rule (see note below)
- (iii) 300 mm or 500 mm rule. Candidates may use their own
- (iv) Triangular block to act as a pivot for the metre rule. This block is to stand on the bench and should be 3 to 5 cm high.
- (v) A 60 g mass, labelled **R** (see note 2)

**Notes**

- 1 The metre rule should balance on the pivot when the 50 cm mark is directly over the pivot. It may be necessary to tape a small mass (e.g. plasticine) to one end of the rule to achieve this.
- 2 The 60 g mass should be suitable for placing on a metre rule in a balancing experiment.

Information required: density of plasticine, using this apparatus

**3** *Items to be supplied by the Centre (per set of apparatus unless otherwise specified)*

- (i) Boiling tube, approximately 25 mm diameter x 150 mm length
- (ii) Metre rule
- (iii)  $200\text{ cm}^3$  or  $250\text{ cm}^3$  or  $300\text{ cm}^3$  measuring cylinder (no other size is to be supplied)
- (iv) Beaker containing approximately  $250\text{ cm}^3$  of cold water
- (v) Approximately 1m of thin, smooth string, or strong thread (which must not stretch)

Information required: external diameter and length of tube

**4** *Items to be supplied by the Centre (per set of apparatus unless otherwise specified).*

- (i) Three optics pins
- (ii) Pin board, 300 mm x 210 mm or larger. A cork mat would be suitable.
- (iii) 300 mm or 500 mm rule. Candidates may use their own.
- (iv) Mirror, approximately 100 x 40 mm
- (v) Holder for the mirror, such that it can stand with the reflecting surface vertical and one of its long sides in contact with the ray trace sheet, see Fig. 4.1. The mirror will need to be rotated to an angle  $\theta = 30^\circ$ .
- (vi) Protractor

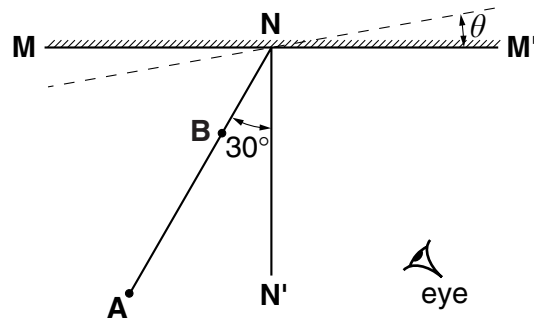


Fig. 4.1

**BLANK PAGE**

**This form must be completed and returned with the scripts.**

**REPORT ON PRACTICAL PHYSICS**

(IGCSE MAY 2000)

*General*

The Supervisor is invited to give details of any difficulties experienced by particular candidates giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (d) any help given to a candidate.

*Information required*

A plan of workbenches, giving details by index number of the places occupied by the candidates for each experiment for each session, must be enclosed with the answer booklets.

Question 2    Density of plasticine

Question 3    Diameter and length of tube



*Information required (cont.)*

A list by name and index number of candidates requiring help, with details of the help provided.

CENTRE NO. ....

NAME OF CENTRE .....

*Declaration (to be signed by the Principal)*

The preparation of the practical examination has been carried out so as to maintain fully the security of the examination.

SIGNED .....